

## CLAIMS

What is claimed is:

1        1. A method of transmitting a loopback cell of a  
2        connection established between a source ATM device and a  
3        destination ATM device of an ATM network, said loopback  
4        cell being returned to one of the switching nodes located  
5        on the connection route, said loopback cell entering said  
6        switching node by a port **P1** of adapter **B1**, before being  
7        switched to an adapter **B2** as a normal cell of said  
8        connection, and being then switched backward to said  
9        adapter **B1** and exiting the switching node by said port **P1**  
10       of said adapter **B1** instead of port **P2** of said adapter **B2**  
11       as a normal cell of said connection,

12       said method comprising the steps of;

13       detecting in said adapter **B2** whether an incoming  
14       cell includes a loopback condition, and if so

15       appending to said incoming cell a specific routing  
16       label indicating that the incoming cell is a cell to be  
17       returned in the connection; and  
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19       using said routing label by the protocol engine of  
20       said adapter **B2** to transmit said cell through the switch  
21       engine to said adapter **B1**, then over said ATM network  
22       from said port **P1** of said adapter **B1**.

1       2. The method according to claim 1, wherein said  
2       specific routing label is appended to said loopback cell

only if a loop control bit is set by the control point of said switching node in said adapter B2.

3. The method according to claim 2, wherein said specific routing label is the identification of said output port P2 to indicate to the protocol engine of said adapter B2 used as an output adapter that said loopback cell will be considered as a normal cell of said connection entering into said port P2.

4. The method according to claim 3, wherein a loopback flag is appended to said loopback cell if said loop control bit is set in order to indicate to the protocol engine of said adapter B2 used as output adapter that said identification of said output port P2 has to be appended to said loopback cell.

5. The method according to claim 4, wherein said loopback cell is transferred to an internal port of said adapter B2, said internal port being only used for loopback cells when said loopback flag is appended to said loopback cell.

6. The method according to claim 5, wherein said internal port is used as an input port of said adapter B2 used as an input adapter for receiving said loopback cell which is considered as a normal cell of the connection entering said port P2 used as input port in view of said identification of said port P2 appended thereto.

1        7.    A system for transmitting a loopback cell of a  
2        connection established between a source ATM device and a  
3        destination ATM device of an ATM network, said loopback  
4        cell being returned to one of the switching nodes located  
5        on the connection route, said loopback cell entering said  
6        switching node by a port **P1** of adapter **B1**, before being  
7        switched to the adapter **B2** as a normal cell of said  
8        connection, and being then switched backward to said  
9        adapter **B1** and exiting the switching node by said port **P1**  
10       of said adapter **B1** instead of said port **P2** of said  
11       adapter **B2** as a normal cell of said connection, said  
12       system comprising:

13               means for detecting in said adapter **B2** whether the  
14       incoming cell includes a loopback condition, and if so

15               means for appending to the incoming cell a specific  
16       routing label indicating that the incoming cell is a cell  
17       to be returned in the connection; and

18               means for using said routing label by the protocol  
19       engine of adapter **B2** to transmit said cell through the  
20       switch engine to said adapter **B1**, then over said ATM  
21       network from said port **P1** of said adapter **B1**.  
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1        8.    The system according to claim 7, wherein said  
2        specific routing label is appended to said loopback cell  
3        only if a loop control bit is set by the control point of  
4        said switching node in said adapter **B2**.

1 9. The system according to claim 8, wherein said  
2 specific routing label is the identification of said  
3 output port **P2** to indicate to the protocol engine of said  
4 adapter **B2** used as an output adapter that said loopback  
5 cell will be considered as a normal cell of said  
6 connection entering into said port **P2**.

1 10. The system according to claim 9, wherein a loopback  
2 flag is appended to said loopback cell if said loop  
3 control bit is set in order to indicate to the protocol  
4 engine of said adapter **B2** used as output adapter that  
5 said identification of said output port **P2** has to be  
6 appended to said loopback cell.

1 11. The system according to claim 10, wherein said  
2 loopback cell is transferred to an internal port of said  
3 adapter **B2**, said internal port being only used for  
4 loopback cells when said loopback flag is appended to  
5 said loopback cell.

1 12. The system according to claim 11, wherein said  
2 internal port is used as an input port of said adapter **B2**  
3 used as an input adapter for receiving said loopback cell  
4 which is considered as a normal cell of the connection  
5 entering said port **P2** used as input port in view of said  
6 identification of said port **P2** appended thereto.